



The Dryden

X-1

XPRESS

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Phantom Eye arrives

By Gray Creech
Dryden Public Affairs

The Boeing Co.’s unmanned hydrogen-powered Phantom Eye high-altitude, long-endurance demonstrator aircraft has arrived at Dryden for assembly and flight-test preparations.

Dryden is hosting the Boeing flight-test operation, providing hangar facilities, engineering, ground test and test range support. The aircraft is expected to fly sometime this year.

Flight tests of the Phantom Eye, like those of Boeing’s smaller Phantom Ray unmanned air vehicle that arrived at Dryden late last year, will be conducted under a Boeing-funded commercial Space Act agreement with NASA. The aircraft, in several crates, arrived at Dryden

March 25 after being trucked from the company’s Phantom Works facilities in St. Louis.

Developed by Boeing, the Phantom Eye is a propeller-driven lightweight aircraft with a high-aspect-ratio, 150-foot-long wing. The fuel efficiency of the hydrogen-fueled propulsion system, coupled with use of winds to stay on station, is expected to enable the aircraft to stay aloft for up to four days while carrying a 450-pound payload. Two modified Ford automotive engines provide power.

The Phantom Eye technology demonstrator is the forerunner of a planned larger version of the craft that is being designed to remain aloft for up to 10 days. The larger version could carry payloads weighing more than 2,000



Concept illustration courtesy The Boeing Company

The Phantom Eye high-altitude, long-endurance aircraft arrived in crates at Dryden March 25. Plans call for it to fly later this year.

pounds for persistent intelligence, surveillance, reconnaissance and communications missions.

Phantom Eye is an updated version of Boeing’s Condor aircraft, which set several records for altitude and endurance in the late 1980s.

New machine dedicated to composites

By Jay Levine
X-Press Editor

Increasingly complex composite components and parts require the latest industry-standard equipment. Recently, the Dryden Experimental Fabrication Facility began operation of such a machine.

The five-axis router enables easier fabrication of composite parts, frees up other machinery and allows the fabrication facility to handle the creation of the latest composite parts and components, explained Ed Swan, Experimental Fabrication branch chief.

Increasing numbers of aircraft are



ED11 0081-13 NASA Photo by Tom Tschida
The Experimental Fabrication Facility’s five-axis router creates a mold.

made of, or are using, composite materials like lightweight and stronger carbon-carbon fibers. That includes several Dryden planes, such as the Global Hawks and Ikhana aircraft.

Though other fabrication facility tools are capable, the five-axis router is dedicated to making composite parts and does not require the delays caused by waiting for the other machines to be freed up to make the part, he added. The parts are also more easily and efficiently made on the router, without the

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Robotics teams compete

Three high school robotics teams sponsored or supported in part by the Dryden Office of Education participated in the FIRST organization’s regional robotics games in San Diego during the second weekend of March. Two of the teams learned that initial designs don’t always achieve the desired performance, when their robots were tested – and occasionally failed – in the crucible of competition.

The three teams - Lancaster High School’s Eagle Robotics, Antelope Valley High School’s Antelopes and Tehachapi High School’s Cyber Penguins – will try again in a second round of regional contests. Antelope Valley and Lancaster teams competed in the Los Angeles regional games in Long Beach March 25-26, while Tehachapi High’s team is entered in the Las Vegas regional April 1-2.

According to Lancaster High School Eagle Robotics team members Jeremy Germita and Lauren Parke, their team won 11 of its 15 matches, resulting in the team being named regional finalists and part of the seventh-seeded three-team alliance. However, in their last match of the competition, their robot, nicknamed “James Bot,” sustained several mechanical failures, one after another.

“The loss in the final match was caused by several subsystems failing – the left side drive wheels’ tread broke off, the mini-bot did not deploy, and, most spectacularly, the arm broke off. Smoke poured from James Bot as he limped across the



ED11 0074-131

NASA Photo by Tom Tschida

Above, Dryden sponsored three teams in the FIRST organization’s March regional robotics games in San Diego. The teams include Tehachapi High School, at left; Antelope Valley High School, center; and Lancaster High School. *Below*, this view of the robotics competition in San Diego shows the event set-up.



ED11 0074-90

NASA Photo by Tom Tschida

field,” the pair wrote in an email. “In the end, we learned about our errors and plan to be back stronger than ever, at the Los Angeles Regional in Long Beach.”

Tehachapi High’s Cyber Penguins had a similar learning experience, according to the team’s advisor, Danielle Evansic.

“Our innovative round design was complemented by the light fiberglass frame the students designed and fabricated during the build season,” Evansic wrote.

“Unfortunately, programming and electrical issues kept the robot from performing up to snuff, and once those were addressed, we

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Committee seeks involvement by all Dryden codes

Members of the newly formed Dryden Safety Committee said they came away from two brainstorming sessions held March 9 and March 23 with valuable information. The committee hopes to have a representative from each Dryden code attend the next meeting, set for April 6 at 1:30 p.m., as part of efforts to learn more about Dryden safety concerns and how to resolve them.

The meetings are scheduled every other week at Dryden’s main campus in the Small Mezzanine and in Room 334 in the Dryden Aircraft Operations Facility in Palmdale.

The first meeting was attended by representatives from codes L, M, MR, OM, OS, PS, XM, S, SF and SH. How to implement a culture of safety across the center was the topic of discussion. Ideas generated

at that meeting led to two agenda items for the second meeting, including ways to increase safety awareness and how to get all codes involved. Representatives from codes MR, OM, S, SF, SH and SQ attended the second meeting, which focused on the discussion topics and incorporating solutions into the workplace.

The Safety Committee considers

attendance by all codes to be critical in establishing an invaluable center-wide communication link. Code representatives can be the voice for their respective areas and can raise issues and concerns specific to those, and also could relay information from meetings. Encouraging employee involvement as a key to safety awareness is the focus of the committee’s efforts.

Boron career day a success

Dryden employees from across the center supported the West Boron Elementary School Career Day March 11. Six employees met with small groups of students to talk about their jobs with NASA.

Dryden presenters included Hernan Posada, remotely operated aircraft pilot; Ryan Lazarony, Information Technology Security; photographer Jim Ross; Keith Day, Dryden machine shop; Dryden meteorologist Scott Wiley; and Lyn Lofberger, flight crew life support.

NASA Dryden pilots Dana Purifoy and Tom Miller flew a low-level flyover in a NASA T-34 support aircraft to conclude the event.



ED11 0073-037 NASA Photo by Tom Tschida

Lyn Lofberger, who works in flight crew life support at Dryden, showed Boron students a high-altitude pressure suit.

NSSC celebrates five years

March 1 was the fifth anniversary of the NASA Shared Services Center. A ceremony marking the occasion was held March 17 at the NSSC facility at the Stennis Space Center in Mississippi.

More than 500 current and former employees and guests attended. Outgoing executive director Richard Arbuthnot was master of ceremonies, with David White, former program manager with contractor Computer Sciences Corp., appearing via video. Both have been with the NSSC since it was established.

Special guests in attendance included Woodrow Whitlow Jr., associate administrator of NASA’s Mission Support Directorate; James L. Jennings, former NASA associate administrator of Institutions and

Management; and Mina Samii, vice president and general manager of the CSC Business Services Division of Science, Engineering and Technology Solutions.

During the ceremony, Arbuthnot expressed pride and gratitude to those in attendance.

“As you already know, my last day at the NSSC is [March 18],” he said. “It really means a great deal to me to be able to be with you at this event. We have set a high bar at the NSSC, but with the caliber of employees we have here, I am confident the NSSC will continue to be a success story.”

Since opening, the NSSC has established itself as a leader in the shared services industry. In 2007, the Shared Services and Outsourcing Network named the

NSSC as runner-up in the Best New Shared Services category, just one year after the center opened. It was awarded the SSON Best New Captive Services Organization Excellence Award in 2009. More recently, the SSON Corporate Executive Board announced the NSSC as the 2010 Force of Ideas Award winner for Shared Services Performance Measurement in the Advanced Shared Services category.

The NSSC is a public/private partnership between NASA, CSC and the states of Mississippi and Louisiana. The NSSC conducts selected business activities in financial management, human resources, information technology and procurement for all ten NASA field centers.

Robotics... from page 2

discovered that the gearing was under-designed. The robot did not meet expectations at the San Diego regional, but students learned a valuable lesson about build quality and the need to be able to rapidly diagnose and adapt to problems in the field. We’ve ordered replacement gears, the students have the robot ready to receive those gears, and we

will hit the ground rolling as soon as we get to our next competition.”

FIRST – For Inspiration and Recognition of Science and Technology – is a nonprofit organization founded in 1989 to stimulate appreciation of science and technology in young people, their schools and their communities. The robotics program was developed to

inspire curiosity and create interest in science, technology, engineering and mathematics among high school students. Through the NASA Robotics Alliance Project, NASA provides grants for 297 teams and sponsors four regional student competitions to encourage young people to investigate careers in the sciences and engineering.

News at NASA

NASA 360 on Hulu

An award-winning NASA-produced television program, “NASA 360,” is available at the online video service hulu.com at <http://www.hulu.com/nasa-360>.

The site features four 30-minute episodes that show how composite materials are changing our world, how NASA has tested space technologies on Earth and what NASA researchers are doing to improve aviation. More programs will be added in coming weeks.

A team at Langley Research Center in Hampton, Va., co-produces the program with the National Institute of Aerospace, also in Hampton. In addition to availability on Hulu, the program airs on NASA Television, select airlines and 450 public broadcasting, cable and commercial stations across the country.

NASA 360 also is available on YouTube, MySpace and Facebook. Viewers can subscribe to the video podcast through iTunes. For more information about NASA TV programs and schedules, visit <http://www.nasa.gov/ntv>.



April 5, 1966 – Fred Haise flew tail flutter tests in the Piper PA-30 Twin Commanche (N8351Y). In fact, the horizontal tail surfaces fluttered so dramatically that Haise commented, “I’m fearless, but that scares me.”

April 14, 1971 – Rocketry pioneer Werner von Braun visited the Flight Research Center.

Router... from page 1

day to set up, one to two days to do the work on it and a day to clean up from using another machine, he said.

The router, which is dedicated to composite work, can be programmed to cut a mold. Simultaneously, the technician prepares the composite set-up so everything is ready to make the part without delays or holding up work on other projects. It takes half the time to fabricate a mold for a part or component using the router.

The new machine also specializes in making molds out of a number of materials and can fabricate parts as a single piece. Once the mold is made, the composite material can be applied to it and then pulled off.

The equipment was an essential addition to the fabrication facility’s capabilities in order to keep pace with industry standards for making composite parts. The addition of the machine allows Dryden the capability of making parts here, rather than contracting out for the work, Swan said.

Besides providing more control of schedule and costs, Swan said it also allows more flexibility in meeting the needs of the researcher or technician that needs a special one-of-a-kind component or part.

For example, he said the part design might be the first of its kind and the engineer might not have the exact specifications and notice changes are needed as his or her research continues. Because the part is made at Dryden, the center



ED11 0081-12

NASA Photo by Tom Tschida

The Experimental Fabrication Facility recently began operations with a five-axis router that expands the facility’s capabilities. From left in front of the router are Jeromy Robbins, Aaron Pahs, Eric Nisbet and Ed Swan.

doesn’t have to pay for changes losing more time, he said.

that are required along the way and Already fabricated by the new
the needs of the researchers and router are parts for the G-III, the
technicians can be met without ER-2 and the Global Hawk.

Whatever the composite part or component fabrication job, the fabrication facility is now better prepared to handle it.

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